

NUCLEONICA: A Platform for Knowledge Management at ITU?

J. Magill



Knowledge Management at ITU:

What can we learn from Nucleonica?



... web driven nuclear science

Sunday, November 18, 2007

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Nucleonica - web driven nuclear science



NUCLEONICA is a new nuclear science web portal from the European Commission's Joint Research Centre. The portal provides a customisable, integrated environment and collaboration platform for the nuclear sciences using the latest internet "Web 2.0" dynamic technology.

NUCLEONICA is aimed at professionals, academics and students working with radionuclides in fields as diverse as the life sciences (e.g. biology, medicine, agriculture), the earth sciences (geology, meteorology, environmental science) and the more traditional disciplines such as nuclear power, health physics and radiation protection, nuclear and radiochemistry, and astrophysics. It is also used as a knowledge management tool to preserve nuclear knowledge built up over many decades by creating modern web-based versions of so-called legacy computer codes.

NUCLEONICA provides "software as a service" on the web rather than through installed software, adding a greater level of stability and security and avoiding version compatibility and update problems. In addition, all NUCLEONICA's web applications are browser and operating system independent and can therefore be accessed by most web browsers.

NUCLEONICA offers the following main features:

- » **Data Centre:** Online interactive nuclide charts. Reference data and searchable databases for internationally evaluated nuclear data. Library creation software.

NUCLEONICA HOT TOPICS

» [Open Call for JRC Traineeships](#)
November 14, 2007

ITU's first open call for JRC-Traineeships has been published on our website. The deadline for applications is 6 December 2007 (midnight). In particular we have a position for assistance in the development of an electronic version of the Karlsruhe

 **JRC**
EUROPEAN COMMISSION


Institute for
Transuranium
Elements

NUCLEAR NEWS

French FM: France is not ruling out a military strike on Iran
NOV 18 Even though in Tehran the IAEA's report was described as a "political victory" that may prevent the intensifying of international sanctions, Kouchner says that "for now Iran persists in not meeting it [...]"

Iran: UNSC interference illegal
NOV 18 Mohammad Saeedi, a senior Iranian nuclear official has said insistence on pursuing Iran's nuclear program at the Security Council lacks legal grounds, PressTV reported. [...]

Iran says ready to act if attacked ...
NOV 18 LONDON, November 18 (IranMania) - Hardline Iranian President Mahmoud Ahmadinejad said Iran was ready to respond if attacked, but played down the prospect of war with the United States, Reuters report [...]

'Safe' uranium that left a town contaminated
NOV 18 It is 50 years since Tony Ciarfello and his friends used the yard of a depleted uranium weapons factory as their playground in Colonie, a suburb of Albany in upstate New York state. "There wasn't no f [...]"

Chavez dealing pain to Spain
NOV 18 Chavez, who has nationalised large parts of the economy this year under his self-styled socialist "revolution", said last week he will revise diplomatic and business ties with the

Training Courses

October 2007 Karlsruhe

Nuclear Science Training Course on Radioactivity, 29 October 2007, Ottmar Nordmann, Karlsruhe

The 16 nuclear science training course on Radioactivity, Hydrocarbons and Radiation with Nuclear Energy was held at the University of Karlsruhe from the 29th to 28th October 2007. The two-day course provided a general overview of the various international applications and the role of nuclear energy in the world today. Participants received lectures on the following topics:

- Nuclear examples and scenarios, a variety of civil and tactical uses in nuclear science and technology were presented by experts in their respective fields.
- A total of approximately participants, around half of them women, with a diverse range of backgrounds attended the course. These were participants from Germany, France, Czech Republic, Poland, Romania and Turkey. In addition there were 10 participants from the Institute for Environmental and Nuclear Engineering, University of Karlsruhe.

Amongst them were students, academics and industry professionals from fields such as nuclear medicine, radiation protection, environmental monitoring and nuclear engineering.

First August 2004, Oslo, Norway

Who to get from the hotel to the conference training centre

Links to the presentation and exercises

Networking with Karlsruhe & Mayo's Exercises

Nuclear Data (J) (Only Experts)

Nuclear Charts (C) (Non-Experts)

Darcy English (A) Detailed Exercises

Douglas J. Strickling (J) Only Exercises

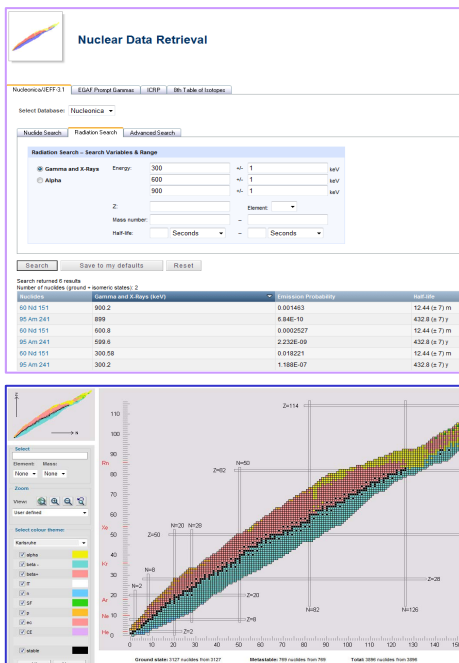
Nuclear Forensics & Risk Profiling (R) Mayo's Exercises

Overview of the Institute for Environmental Engineering (E) (Visits)

Advanced Nuclear Training (J) (Mayo)

Source: <http://www.kit.edu/~nucphys/2007/October%2007>

Data centre...


















Community Members

Pending Contacts

all Users

my Contacts


Image	Name	Organization
	MARTINA ADORNI	University of Pisa - DIMNP - GRNSPG
	Aleksandra Schwenk-Ferrero	Forschungszentrum Karlsruhe - Institute for
	Mikael Andersson	Westinghouse Electric Sweden AB
	Martin Badertscher	
	Remigiusz Baranczyk	European Commission DG TREN
	Enrico Barbina	Nabla Progetti Srl
	Valerio Barbina	Nabla Progetti Srl
	Bjoern Becker	Forschungszentrum Karlsruhe GmbH, Institut
	Fabio Belloni	European Commission, DG-JRC, Institute for
	Andrey Berlizov	Institute for Transuranium Elements, EC JRC
	Yuri Bilodid	Forschungszentrum Dresden-Rossendorf
	Emilie BOSSE	CEA
	Berkan Cetinkaya	Ege University, Institute of Nuclear Sciences
	Vanessa Chisté	
	Catalina Chitu	

Profile

Contacts

Simon Jerome

National Physical Laboratory



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Name	Simon Jerome
Location	United Kingdom
Nationality	British
Organization	National Physical Laboratory
Job Title	Head of Radiochemistry
Areas Of Interest	Radiochemistry; Analytical Chemistry; Radiochemical Analysis; Low-level radioactivity measurement; Inter-laboratory comparisons and proficiency testing; ISO 17025:2005 Technical Assessor; ISO Guide 43
E-Mail	simon.jerome@npl.co.uk

Organization	Loughborough University
Address	Ashby Road Loughborough Leics LE11 3TU UK
Job Title	Lecturer in Radiochemistry
Areas Of Interest	Migration of radionuclides in the environment Effect of organics, natural and anthropogenic, on radionuclide transport
Latest Publications	Muhammad Haleem Khan, Peter Warwick and Nick Evans, Spectrophotometric Determination of Uranium with Arsenazo-III in Perchloric Acid, Chemosphere, 63, 2006, p 1165 Peter Warwick, Nick Evans and Sarah Vines, Studies on some divalent Metal a-Isosaccharinic Acid Complexes, Radiochimica Acta, 94(6-7), 2006, pp 363-369. S. Aldridge, P. Warwick, N. Evans and S. Vines., Degradation of tetraphenylphosphonium bromide at high pH and its effect on radionuclide solubility, Chemosphere, 66(4), 2007, pp

October 2007 Karlsruhe

[edit]

9th Nuclear Science Training Course with Nucleonica, 25/26th Oct. 2007, Ostendorfhaus, Karlsruhe

The 9th Nuclear Science training course on Radioactivity, Radionuclides and Radiation with Nucleonica was held at the Ostendorfhaus, Karlsruhe from the 25th to 26th October, 2007. The two-day course provided a general introduction to the recently released Nucleonica: the new science networking and applications portal. Nucleonica is a powerful and versatile web-based software package for the nuclear science community. With examples and exercises, a variety of core and topical issues in nuclear science and technology were presented by experts in their respective fields.

A total of twenty-nine participants, around half of them women, with a diverse range of backgrounds attended the course. There were participants from Azerbaijan, Belgium, Bulgaria, Czech Republic, Poland, Romania and Turkey. In addition there were 10 participants from the Institute for Transuranium Elements. Among them were students, academics and industry professionals from fields such as nuclear medicine, radiation protection, environmental radioactivity and reactor physics.

[Final Agenda 25th Oct. 2007](#)

[How to get from the hotel to the conference training centre](#)

[Links to the presentations and exercises:](#)

[Networking with Nucleonica \(J. Magill\) Exercises](#)

[Nuclear Data \(J. Galy\) Exercises](#)

[Nuclide Charts \(C. Normand\) Exercises](#)

[Decay Engine \(A. Berlizov\) Exercises](#)

[Dosimetry & Shielding \(J. Galy\) Exercises](#)

[Nuclear Forensics & Illicit Trafficking \(K. Mayer\) Exercises](#)

[Overview of the Institute for Transuranium Elements \(F. Wastin\)](#)

[Advanced Nucleonica Features \(J. Magill\)](#)

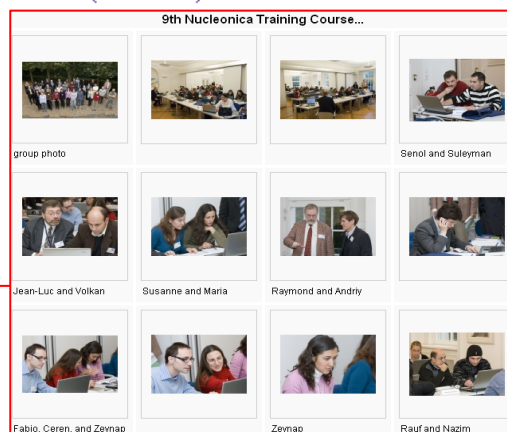
[Training Course Feedback](#)

[QM Questionnaire](#)

[Course Certificate](#)

[List of Participants](#)

[Gallery](#)



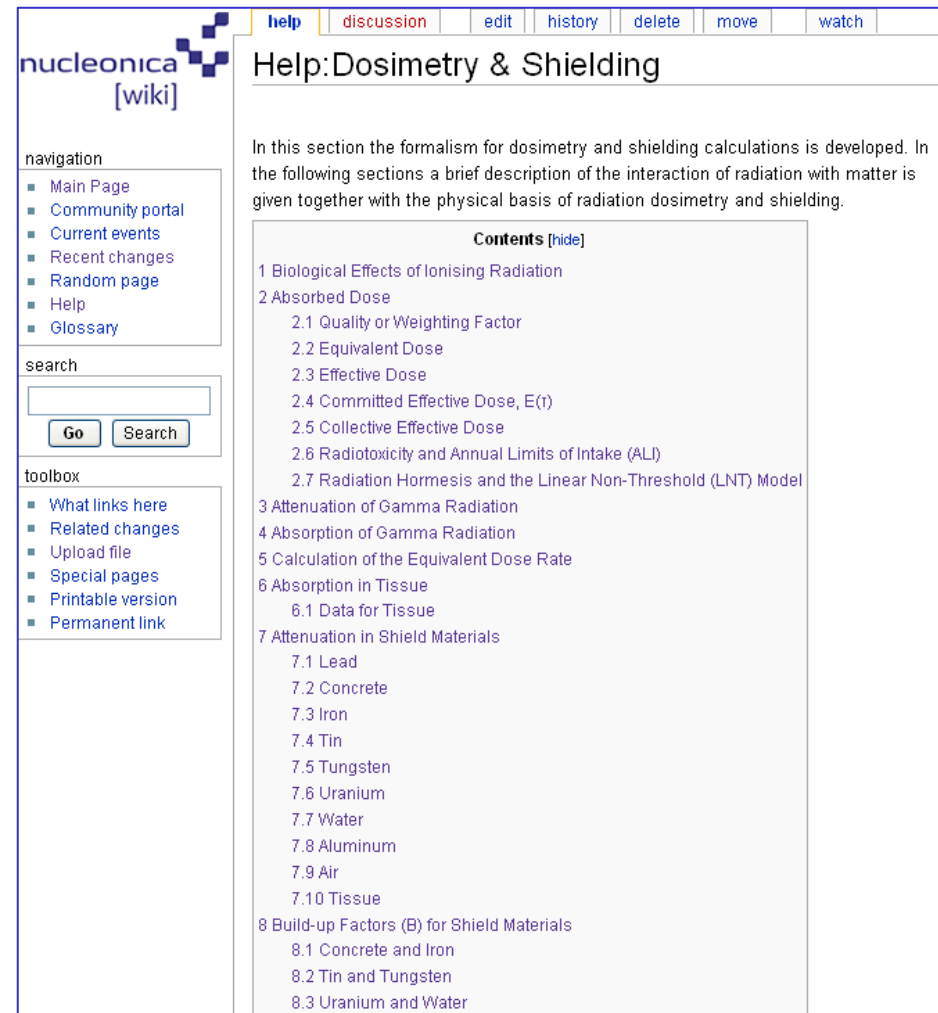
Group Photo Oct. 2007, Ostendorfhaus Karlsruhe



Education:


For education purposes, use the wiki :
contains information on

- Karlsruhe Nuclide Chart
- Radioactive decay
- Interaction of radiation with matter
- Range and stopping power of charged particles in matter
- Monte Carlo methods
- Basics of Gamma Spectrometry
- etc.



The screenshot shows a wiki page for 'nucleonica [wiki]'. The page title is 'Help: Dosimetry & Shielding'. The page content includes a navigation sidebar with links like 'Main Page', 'Community portal', 'Current events', 'Recent changes', 'Random page', 'Help', and 'Glossary'. The main content area has a 'Contents' table of contents with links to various sections: 1 Biological Effects of Ionising Radiation, 2 Absorbed Dose (with sub-sections 2.1 to 2.7), 3 Attenuation of Gamma Radiation, 4 Absorption of Gamma Radiation, 5 Calculation of the Equivalent Dose Rate, 6 Absorption in Tissue (with sub-section 6.1), 7 Attenuation in Shield Materials (with sub-sections 7.1 to 7.10), and 8 Build-up Factors (B) for Shield Materials (with sub-sections 8.1 to 8.3).

Use the NucleonicaWiki to test the idea...



adminonly

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AdminOnly:Scientific Knowledge Management @ ITU

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 - DSolutions
 - ITU Intranet
- Scientific Resources and Services @JRC
 - ScienceDirect
 - Scopus
- Scientific Information Resources - Public Web Applications
 - JRC Project Knowledge System (PKS)
 - JRC SAP PS
 - JRC Europe Media Monitor News Brief
 - FZK Library
 - Nuclear Science References
 - Google Scholar
 - Intute
 - Patents
 - Translations and Drafting Aides

Knowledge Management Introduction

Knowledge Management

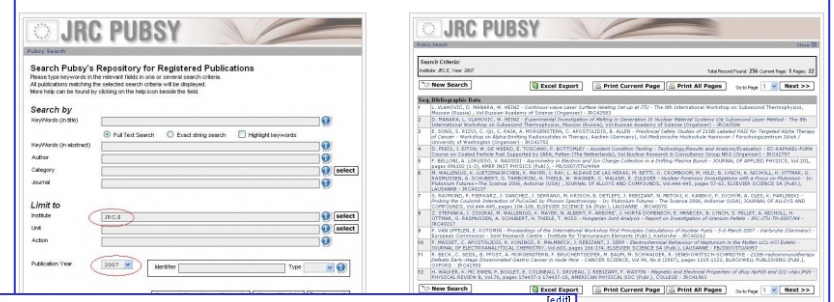
Publications Management System PUBSY

The JRC PUBSY portal is the corporate publications management system of the JRC. As such, PUBSY is also the publications management system used at ITU. It consists of the following features:

- Access to the digital repository of JRC scientific publications and reports
- The internal workflow system for publications registration
- Up-to-date information about the JRC Publications policy

It is managed by the PUBSY Corporate Publications Office in Ispra (JRC-PUBSY@ec.europa.eu).

In the example below, the PUBSY search interface has been used to find all publications from ITU in 2007. The results are shown to the right. There are in total 256 registered publications in the PUBSY database for ITU in 2007. Clicking on any individual result leads to an abstract window with a link to the full text of the document (pdf).

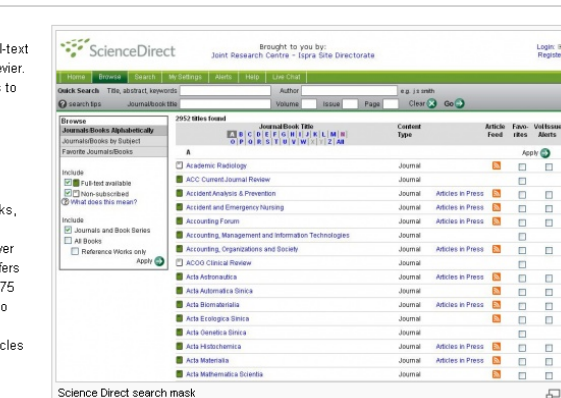


JRC PUBSY search results for ITU in 2007. The interface shows search criteria and a list of results. The results are displayed in a table with columns for Title, Author, and Year. The results are sorted by relevance.

ScienceDirect

ScienceDirect is the world's largest electronic collection of science, technology and medical full-text and bibliographic information, maintained by Elsevier. Through this platform, all JRC users have access to the full-text of the articles published in the last 7 years in 1,813 journals; abstracts can be freely accessed for all journals by all users.

ScienceDirect contains over 25% of the world's science, technology and medicine full text and bibliographic information. Apart from online eBooks, Reference Works, Handbooks and Book Series ScienceDirect offers a rich journal collection of over 2,400 titles. In addition, the Backfiles program offers the ability to search a historical archive of over 6.75 million articles directly from your desktop, back to Volume 1, Issue 1. The collections contain four million articles prior to 1995, and 2.75 million articles from after 1994.

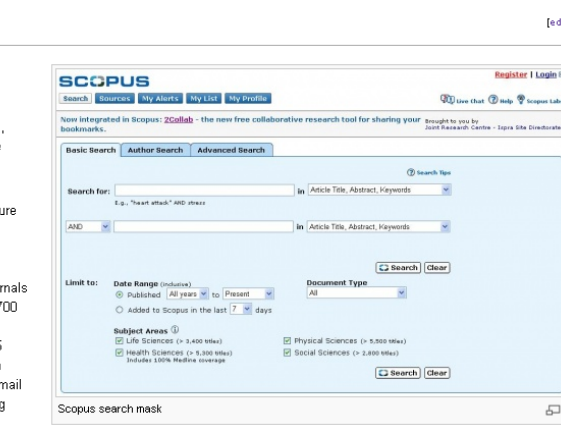


ScienceDirect search results. The interface shows search criteria and a list of results. The results are displayed in a table with columns for Title, Author, and Year. The results are sorted by relevance.

Scopus


Scopus is the largest abstract and citation database of research literature and quality web sources. It's designed to find the information scientists need. Quick, easy and comprehensive, Scopus provides superior support of the literature research process. Updated daily, Scopus offers:

Produced by Elsevier, SCOPUS is the largest abstract and citation database of research literature and quality web sources, designed to find the information today's researchers need. SCOPUS provides an accurate indexation of about 15,000 journals (among them, over 12,950 academic journals and 535 Open Access journals), and more than 700 conference proceedings are covered. SCOPUS includes currently 28 million of abstracts and 245 million of references added to all abstracts. Upon individual registration, users can easily create e-mail alerts to stay up-to-date on new articles matching their search query.



Scopus search results. The interface shows search criteria and a list of results. The results are displayed in a table with columns for Title, Author, and Year. The results are sorted by relevance.

so be exported to Excel for further earlier publications, see ITU Publications



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AdminOnly:Scientific Knowledge Management @ ITU

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toolbox

■ What links here

■ Related changes


■ Upload file

■ Special pages

■ Printable version

■ Permanent link

Knowledge Management Introduction

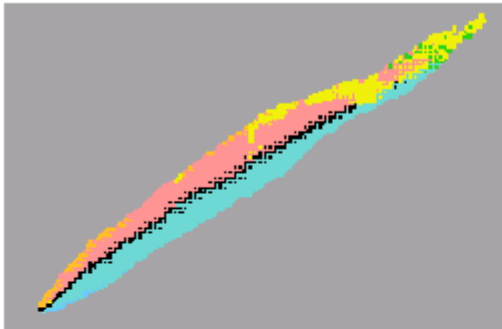
Knowledge Managment 

Training:

For training purposes we have
a variety of modules


- Nuclide charts & Karlsruhe Nuclide Chart
- Decay Engine
- Nuclear Data Retrieval
- Range Module (SRIM)
- webKORIGEN
- Gamma Spectrim Generator (GSG)
- *easyMonteCarlo* (eMC)

> Nuclide Explorer



>> Actual Chart: Karlsruhe

> Search Nucleonica Documentation

 Nuclear Data Retrieval

> Application Centre

- >> Mass Activity Calculator
- >> Decay Engine
- >> Dosimetry & Shielding
- >> Range & Stopping Power
- >> webKORIGEN
- >> Universal Nuclide Chart
- >> Transport & Packaging
- >> Nuclide mixtures
- >> Nucleonica Scripting
- >> Library creation for 3rd party software
- >> Radiological Dispersion Module
- >> Gamma Spectrum Generator (IE only)
- >> *easy Monte Carlo* (IE only)
- >> Extended Graph Module

Training:

Previous Training Courses

- 2.1 October 2008 Izmir
- 2.2 October 2008 Karlsruhe
- 2.3 October 2007 Karlsruhe
- 2.4 September 2006 Ljubljana
- 2.5 April 2006 Karlsruhe
- 2.6 September 2005 Ljubljana
- 2.7 April 2005 Karlsruhe
- 2.8 October 2004 Karlsruhe
- 2.9 April 2004 Karlsruhe
- 2.10 October 2003 Karlsruhe
- 2.11 September 2003 Karlsruhe

October 2008 Izmir

10th Nuclear Science Training Course with Nucleonica, 8/10th Oct. 2008, Cesme, Izmir, Turkey

The 10th Nuclear Science training course on Radioactivity, Radionuclides and Radiation with Nucleonica took place in the Altin Yunus Hotel, Cesme (near Izmir), Turkey, from the 8th to 10th October 2008. It was jointly organized by the European Commission/ITU Germany and the Ege University, Institute of Nuclear Science, Izmir, Turkey. In total 27 participants from Turkey (20), Macedonia (3), Czech Republik (2) and Russia (2) took part in the training course. A welcome address was given by M. S. Anaç, the vice rector of Ege University, an agricultural engineer with experience in nuclear tracer methods.

[Training Course Flyer \(with organisation committee\)](#)

[Final Agenda 6th Oct. 2008](#)

[Links to the presentations and exercises:](#)

[Nucleonica Overview \(J. Magill\)](#)

[Mass Activity Calculator \(J. Magill\) Exercises](#)

[Nucleonica Data Center \(J. Galy\) Exercises](#)

[Decay Engine \(J. Magill\) Exercises](#)

[Range & Stopping Power \(M. Tufan\) Exercises/Case Study](#)

[An Interactive Web Accessible Gamma-Spectrum Simulator \(A. Berlizov\) Exercises](#)

[Nuclear Power in Space \(T. Zagar\) Exercises](#)

[easyMonteCarlo \(A. Berlizov\) Exercises](#)

[Overview of the Institute of Nuclear Sciences, Izmir \(Prof. M. Eral, Director Institute of Nuclear Sciences\)](#)

[Nuclide Chart \(C. Normand\) Exercises](#)

[Nuclear Forensics & Illicit Trafficking \(K. Mayer\) Exercises](#)

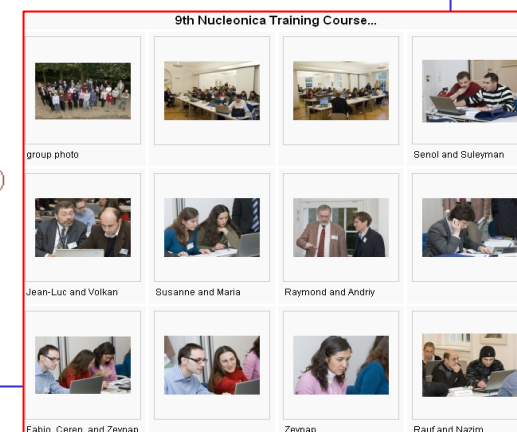
[List of participants](#)

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[Testimonials](#)

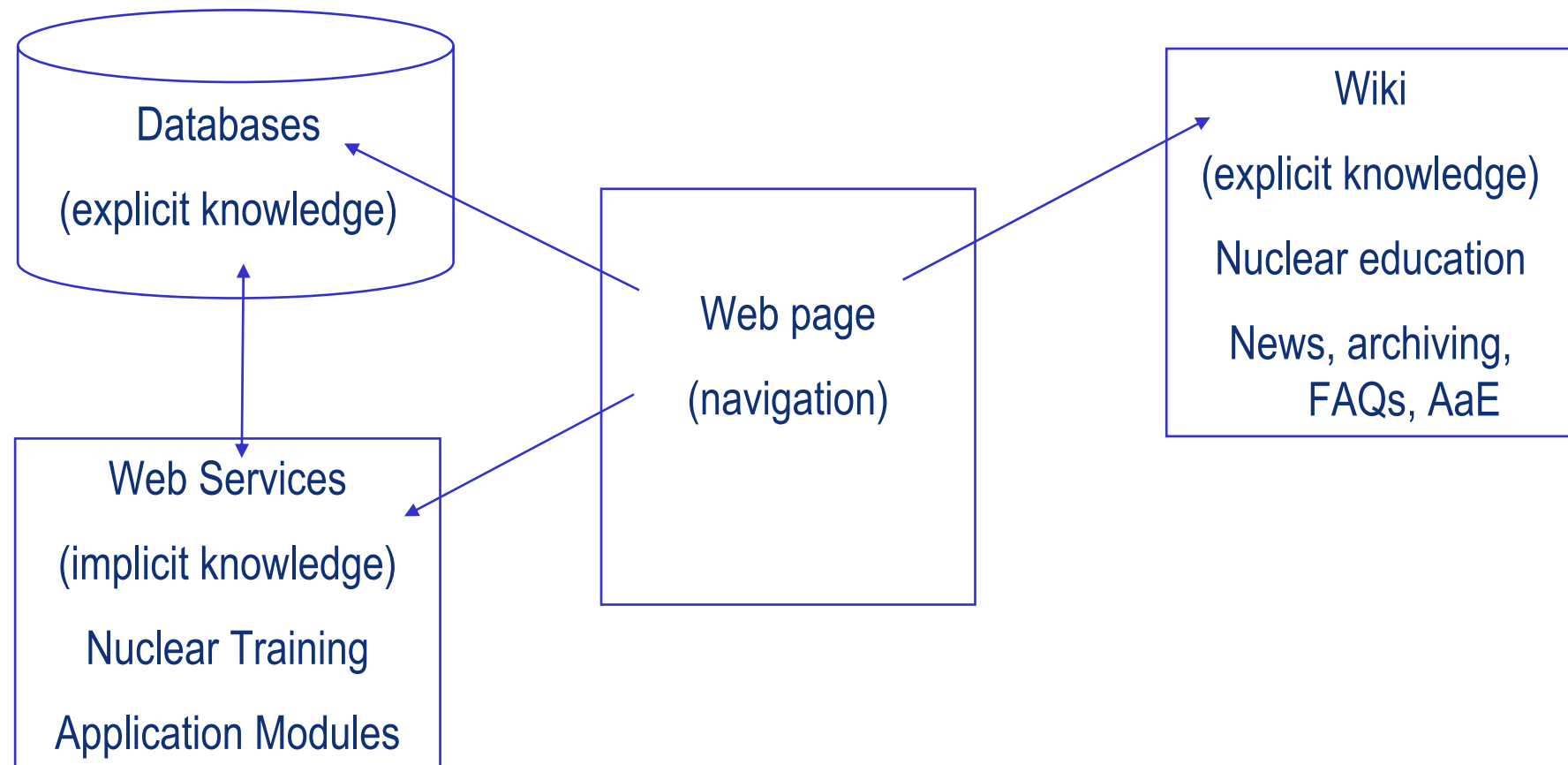


10th Nucleonica training course at the Altin Yunus Hotel, Cesme (near Izmir), Turkey, 8-10 Oct. 2008



Nucleonica as a Knowledge Management Platform:

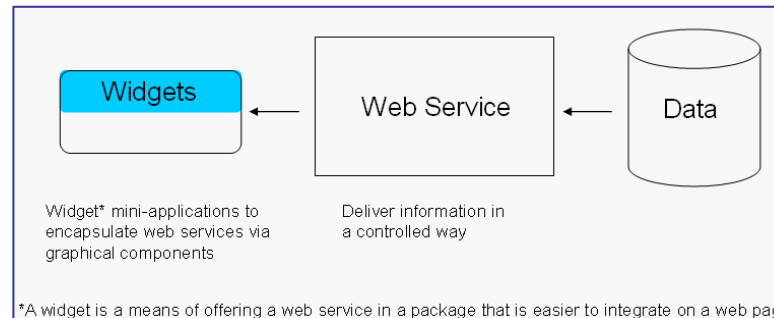
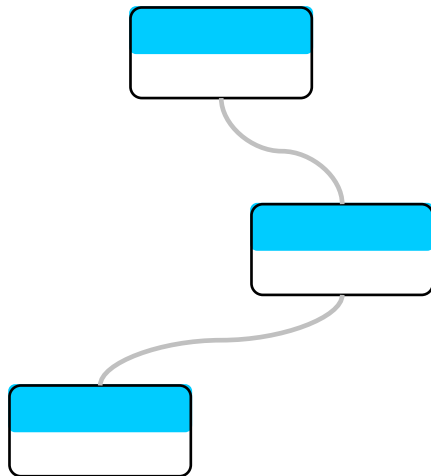
Basic Architecture



SciencePipes

**A New Approach to Knowledge Management, Education and Training
based on Modular Web Services**

Pipe editor (Canvas)

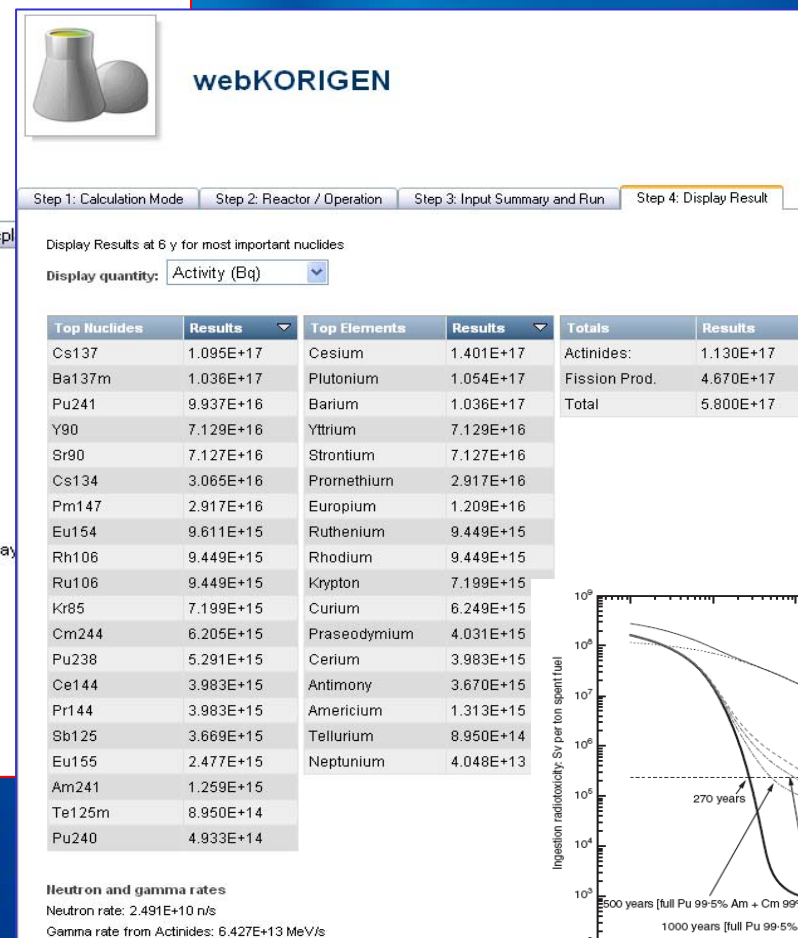
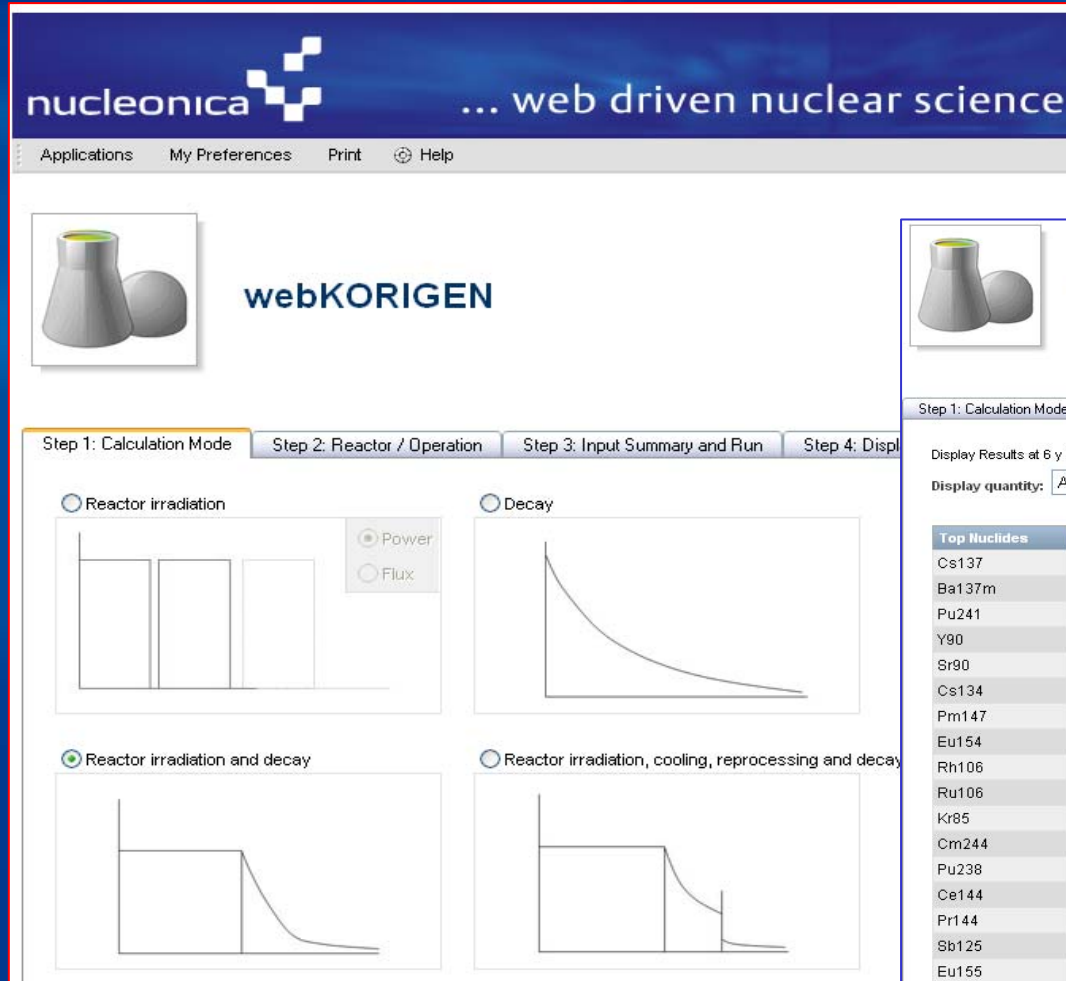


- can be combined from other web services from any location (+)
- can only be called up from anywhere anytime (+)
- combining web services requires no programming knowledge(+)



Highlight: webKORIGEN

Starting with an initial reactor fuel or a target nuclide, webKORIGEN calculates the time evolution of nuclide densities changing due to decays and neutron-induced reactions in a PWR, BWR and FR and determines derived nuclear properties such as masses, activities, heat releases, etc.



Highlight: Gamma Spectrum Generator

Co60

10.47 m 5.27 y

Gamma Spectrum Generator
27 Cobalt
Actual chart: Karlsruhe

Getting started

Reference manual

User forum

Element:

Co

 Mass:

60

Nuclide Mixtures Selector

Quantity:

Becquerel

 Reference point:

1.000e+8

Measurement start

Measurement setup

Calculation results

Options

Measurement time:

sec

1000

Start

Start in background

Current configuration:

HPGe, coaxial, p-type, rel. eff. 50% (default)

Save as

Delete

Dimensions in

mm

Source

Filter

HPGe

Crystal

Crystal diameter

Crystal length

Source to Detector distance

Cont.

250.0

59.0

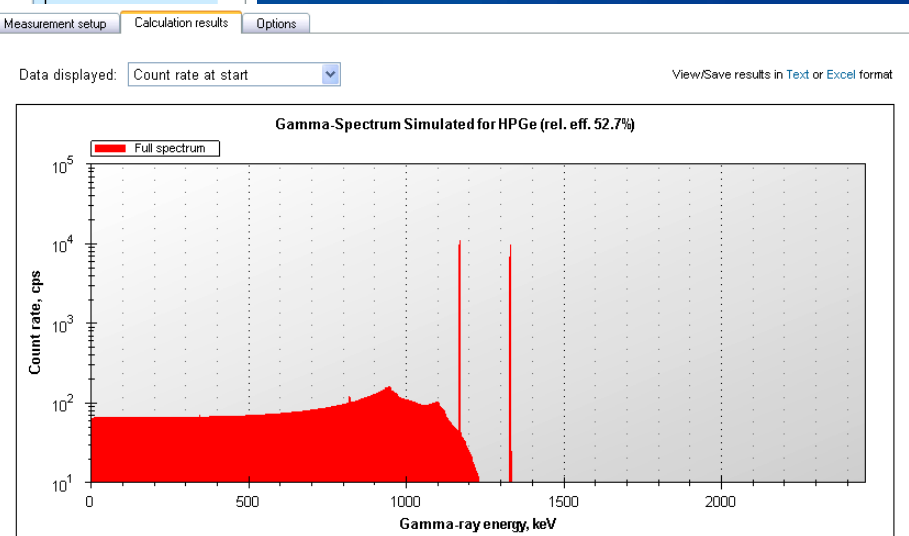
10.0

45.0

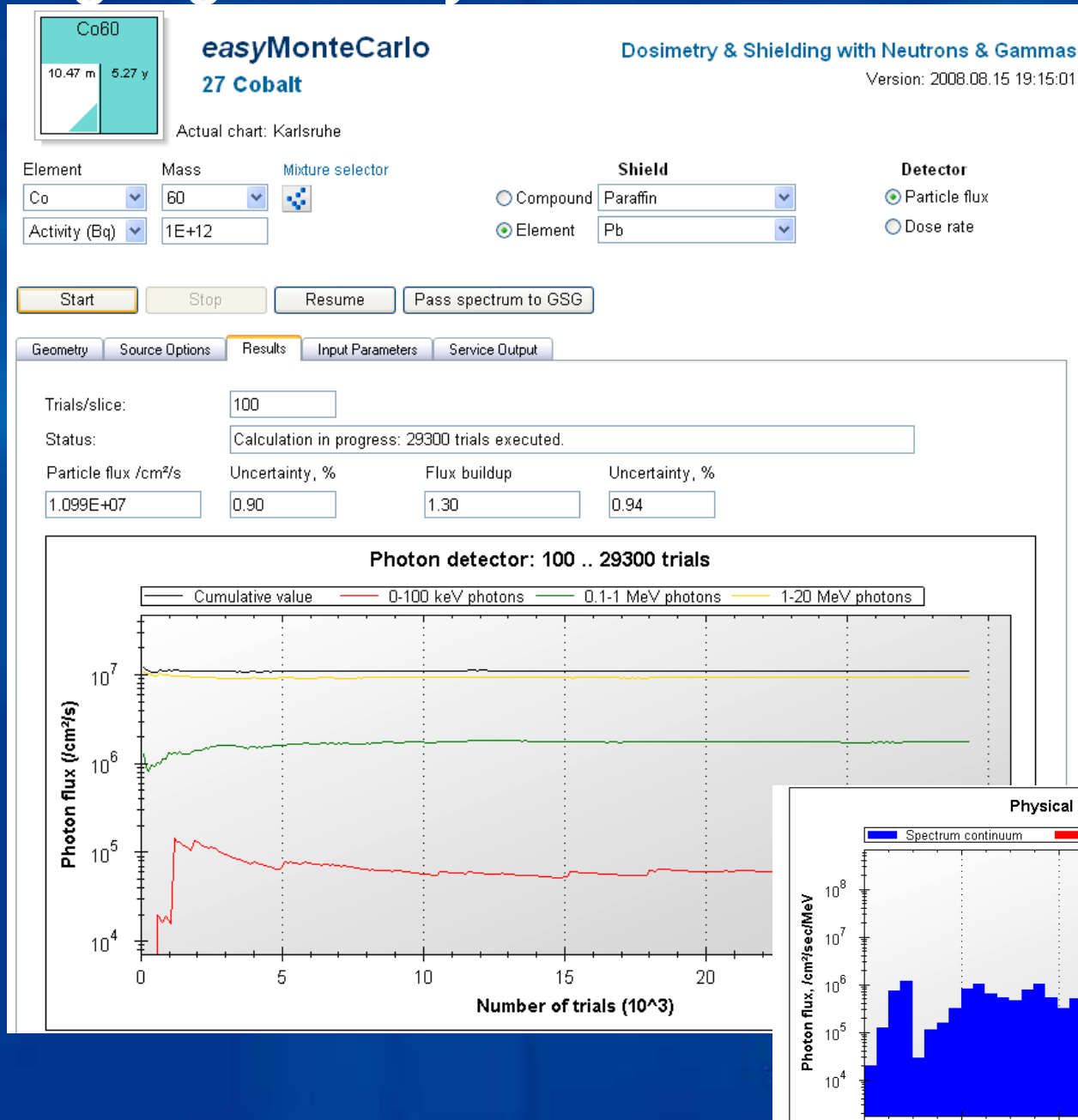
70.0

Gamma Spectrum Generator

... can be used to simulate the gamma spectrum of radioactive substances with a variety of detectors (e.g. NaI, HPGe, etc.). The simulator presents an efficient visual teaching aid that is especially useful in training facilities which have restrictions on the use of radioactive substances, or when sources of special interest are not readily available.




Highlight: *easyMonteCarlo*



easyMonteCarlo:

easy to use, fast, accurate dosimetry and shielding calculations for gammas and neutrons using Nucleonica's powerful Monte Carlo engine. Investigate the effects of self-attenuation in the source, build-up effects in the shield etc., on the dose rate and the particle flux distribution at the detector...

http://www.nucleonica.net:81/wiki/index.php/Help:Knowledge_Management_Strategy



[help](#) [discussion](#) [edit](#) [history](#) [delete](#) [move](#) [watch](#)

navigation

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Help:Knowledge Management Strategy

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Background

[\[edit\]](#)

At the PAC5 meeting on 24th Sept. 2008 at ITU, Mr. Fanghänel requested the setting up of a sub-group on "Corporate JRC-wide Nuclear Knowledge Management Strategy" to be chaired by J. Magill. Each JRC Institute (ITU, Petten, Geel, IPSC, IEM) should be represented by 1-2 participants. The aim of this sub-group is to investigate if NUCLEONICA or NUCLEONICA-like platforms are suitable for hosting a JRC wide nuclear knowledge management portal and to identify the resources (manpower, costs, etc.) and timescale required to set this up. The kick-off meeting is scheduled for 13th Nov. 2008 at ITU, Karlsruhe. Further meetings are planned. The final report should be ready by end Feb. 2009 for the next PAC meeting.

[Agenda for kick-off meeting](#)

Scope

[\[edit\]](#)

Some of the basic steps in developing a nuclear knowledge management strategy should cover:

- identify the needs of the Institutes/JRC with existing heterogeneous IT landscapes
- identify the main directions to be taken (open source, microsoft etc.)
- identify the products available (ECM, Alfresco, CIRCA, etc.)
- implementation of the environment (how will this be hosted and by whom)
- resources: estimate the cost of setting this up and the running costs
- tender: realisation of this via an external company

Thanks!



nucleonica

